OptiMOS™-T2 Power-Transistor

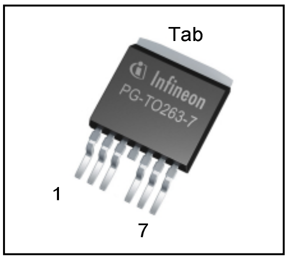
Product Summary

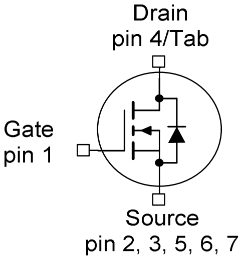
V_{DS}	80	V
$R_{DS(on),max}$	3.2	mΩ
I_D	160	A

Features

- N-channel - Enhancement mode
- AEC Q101 qualified
- MSL1 up to 260°C peak reflow
- 175°C operating temperature
- Green Product (RoHS compliant)
- 100% Avalanche tested

PG-TO263-7-3





Type	Package	Marking
IPB160N08S4-03	PG-TO263-7-3	4N0803

Maximum ratings, at T_j=25 °C, unless otherwise specified

Parameter	Symbol	Conditions	Value	Unit
Continuous drain current[1]	I_D	T_C=25°C, V_{GS}=10V	160	A
		T_C=100°C, V_{GS}=10V[2]	120	
Pulsed drain current[2]	$I_{D,pulse}$	T_C=25°C	640	
Avalanche energy, single pulse[2]	E_{AS}	I_D=80A	350	mJ
Avalanche current, single pulse	I_{AS}	-	120	A
Gate source voltage	V_{GS}	-	±20	V
Power dissipation	P_{tot}	T_C=25°C	208	W
Operating and storage temperature	T_j, T_{stg}	-	-55 ... +175	°C

Parameter	Symbol	Conditions	Values			Unit
			min.	typ.	max.	
Thermal characteristics[2)]						
Thermal resistance, junction - case	R_{thJC}	-	-	-	0.72	K/W
SMD version, device on PCB	R_{thJA}	minimal footprint	-	-	62	
		6 cm^2 cooling area[3)]	-	-	40	

Electrical characteristics, at T_j=25 °C, unless otherwise specified

Parameter	Symbol	Conditions	min.	typ.	max.	Unit
Static characteristics						
Drain-source breakdown voltage	$V_{\text{(BR)DSS}}$	V_{GS}=0V, I_D= 1mA	80	-	-	V
Gate threshold voltage	$V_{\text{GS(th)}}$	V_{DS}=V_{GS}, I_D=150µA	2.0	3.0	4.0	
Zero gate voltage drain current	I_{DSS}	V_{DS}=80V, V_{GS}=0V, T_j=25°C	-	0.03	1	µA
		V_{DS}=80V, V_{GS}=0V, T_j=125°C[2)]	-	10	200	
Gate-source leakage current	I_{GSS}	V_{GS}=20V, V_{DS}=0V	-	-	100	nA
Drain-source on-state resistance	$R_{\text{DS(on)}}$	V_{GS}=10V, I_D=100A	-	2.6	3.2	mΩ

Parameter	Symbol	Conditions	Values			Unit
			min.	typ.	max.	
Dynamic characteristics[2]						
Input capacitance	C_{iss}	V_{GS}=0V, V_{DS}=25V, f=1MHz	-	5961	7750	pF
Output capacitance	C_{oss}		-	2305	2997	
Reverse transfer capacitance	C_{rss}		-	120	239	
Turn-on delay time	$t_{d(on)}$	V_{DD}=40V, V_{GS}=10V, I_D=160A, R_G=3.5Ω	-	18	-	ns
Rise time	t_r		-	11	-	
Turn-off delay time	$t_{d(off)}$		-	30	-	
Fall time	t_f		-	38	-	
Gate Charge Characteristics[2]						
Gate to source charge	Q_{gs}	V_{DD}=64V, I_D=160A, V_{GS}=0 to 10V	-	31	40	nC
Gate to drain charge	Q_{gd}		-	19	37	
Gate charge total	Q_g		-	86	112	
Gate plateau voltage	$V_{plateau}$		-	5.3	-	V
Reverse Diode						
Diode continous forward current[2]	I_S	T_C=25°C	-	-	160	A
Diode pulse current[2]	$I_{S,pulse}$		-	-	640	
Diode forward voltage	V_{SD}	V_{GS}=0V, I_F=100A, T_j=25°C	-	0.9	1.3	V
Reverse recovery time[2]	t_{rr}	V_R=40V, I_F=50A, di_F/dt=100A/µs	-	74	-	ns
Reverse recovery charge[2]	Q_{rr}		-	160	-	nC

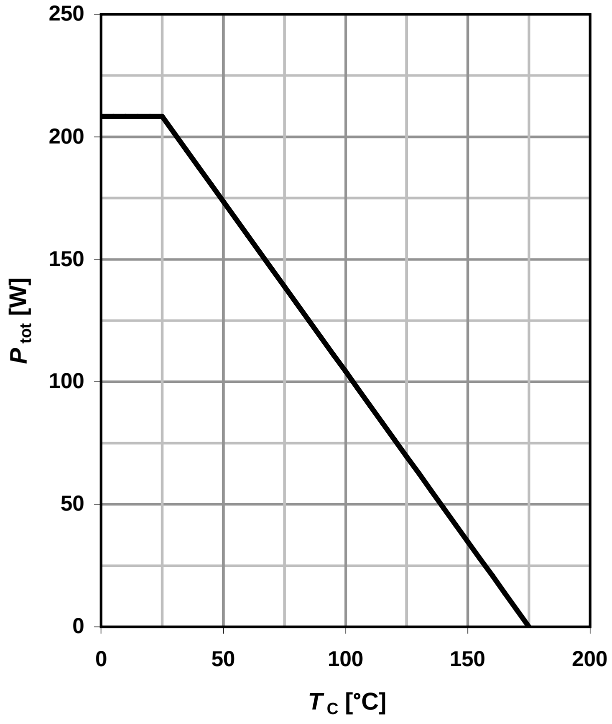
[1] Current is limited by bondwire; with an R_{thJC} = 0.72K/W the chip is able to carry 186A at 25°C.

[2] Specified by design. Not subject to production test.

[3] Device on 40 mm x 40 mm x 1.5 mm epoxy PCB FR4 with 6 cm^2 (one layer, 70 µm thick) copper area for drain connection. PCB is vertical in still air.

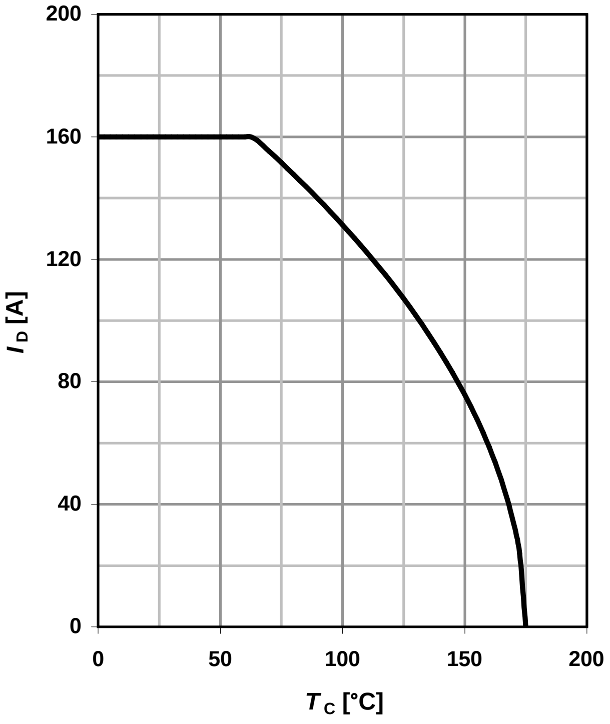
1 Power dissipation

$P_{tot} = f(T_C)$; $V_{GS} \geq 6$ V



2 Drain current

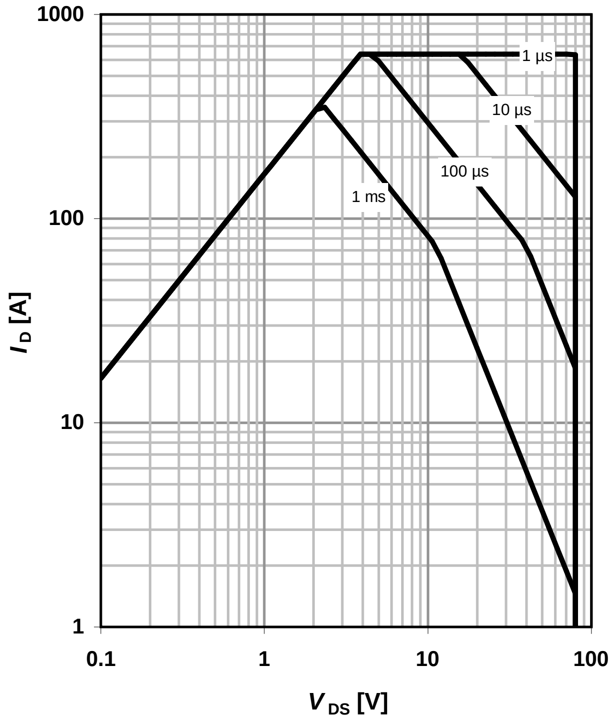
$I_D = f(T_C)$; $V_{GS} = 10$ V; SMD



3 Safe operating area

$I_D = f(V_{DS})$; $T_C = 25$ °C; $D = 0$; SMD

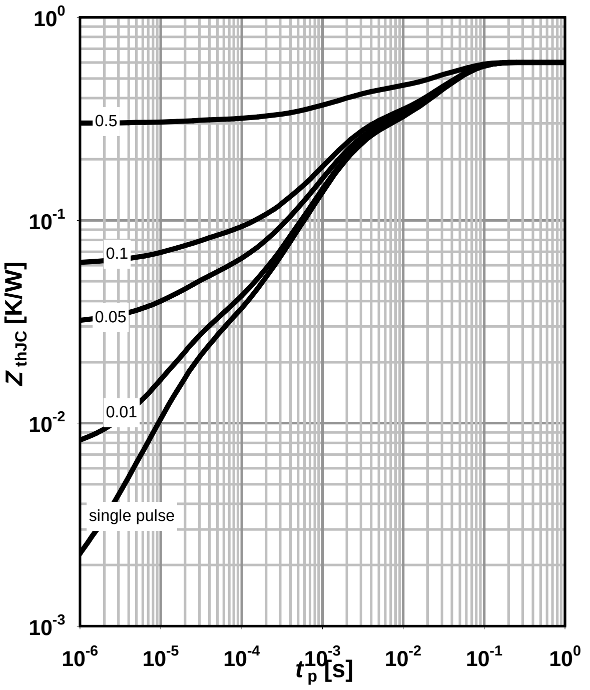
parameter: t_p



4 Max. transient thermal impedance

$Z_{thJC} = f(t_p)$

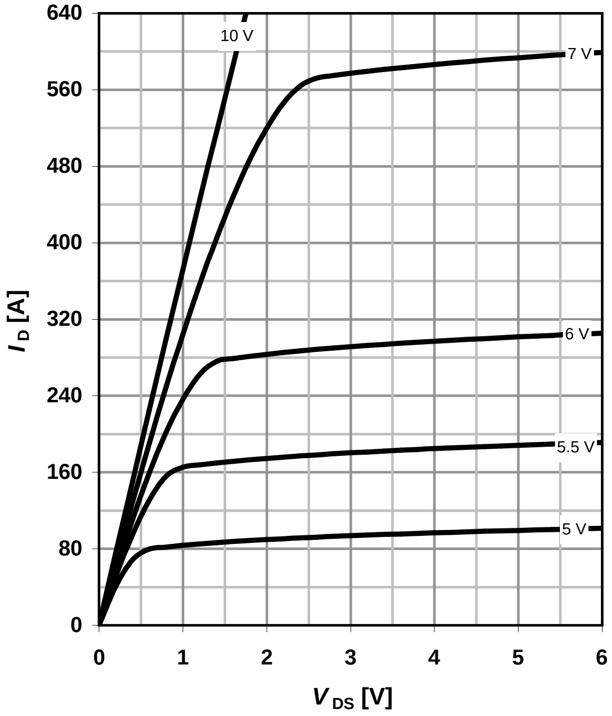
parameter: $D = t_p/T$



5 Typ. output characteristics

$I_D = f(V_{DS})$; $T_j = 25$ °C; SMD

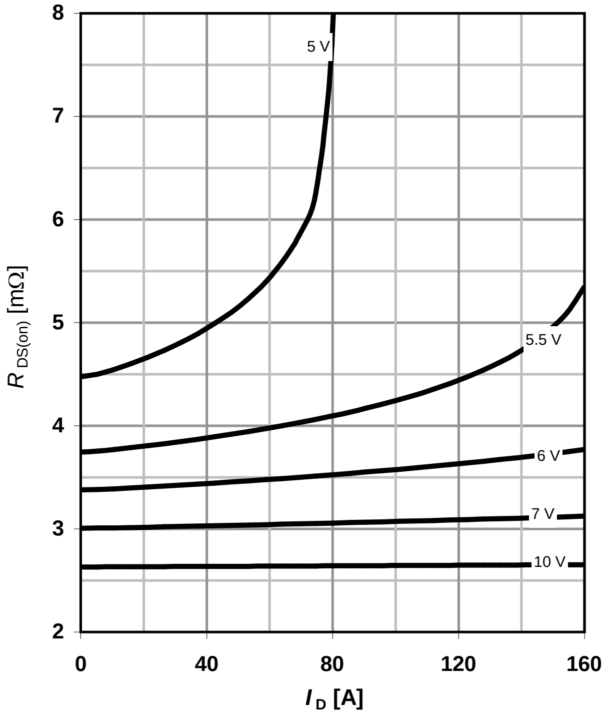
parameter: V_{GS}



6 Typ. drain-source on-state resistance

$R_{DS(on)} = f(I_D)$; $T_j = 25$ °C; SMD

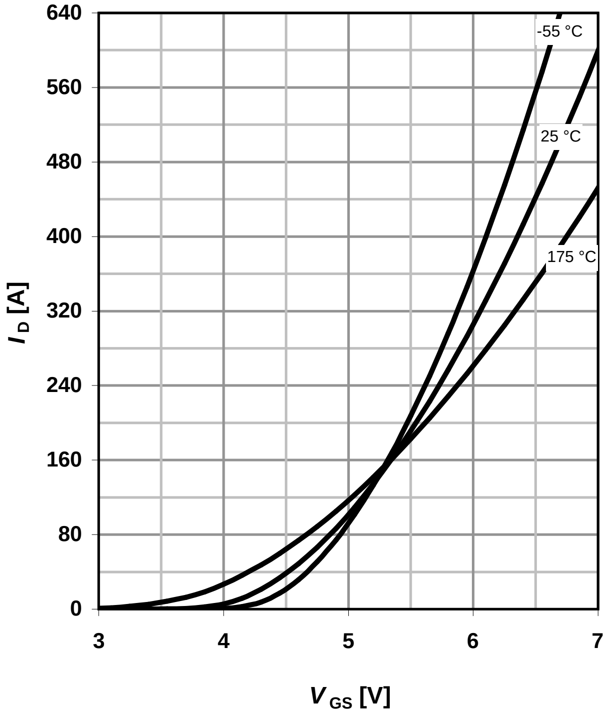
parameter: V_{GS}



7 Typ. transfer characteristics

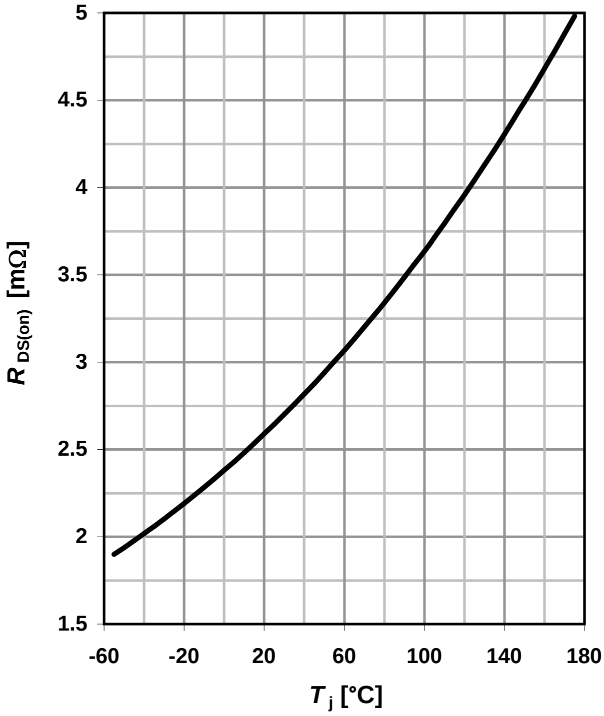
$I_D = f(V_{GS})$; $V_{DS} = 6$V

parameter: T_j



8 Typ. drain-source on-state resistance

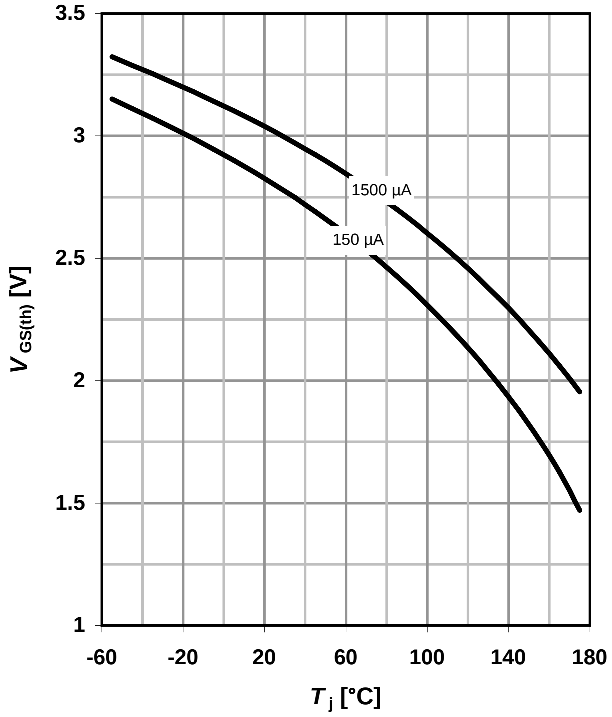
$R_{DS(on)} = f(T_j)$; $I_D = 100$ A; $V_{GS} = 10$ V; SMD



9 Typ. gate threshold voltage

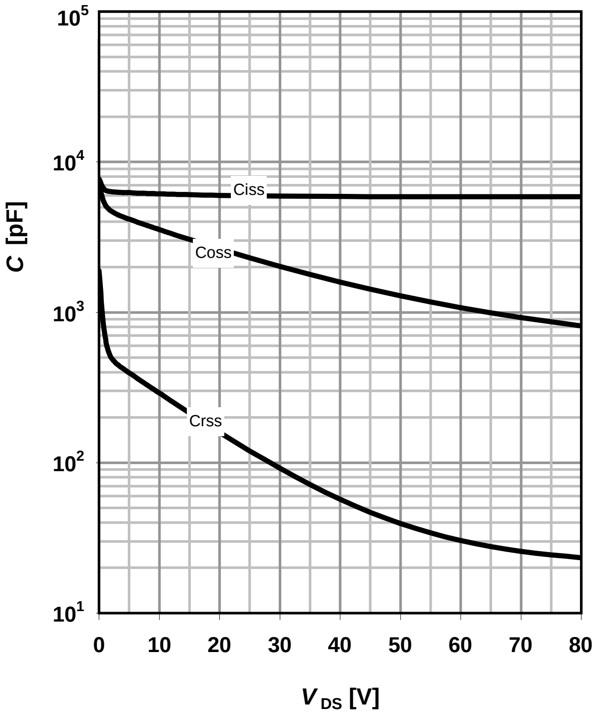
$V_{GS(th)} = f(T_j)$; $V_{GS} = V_{DS}$

parameter: I_D



10 Typ. capacitances

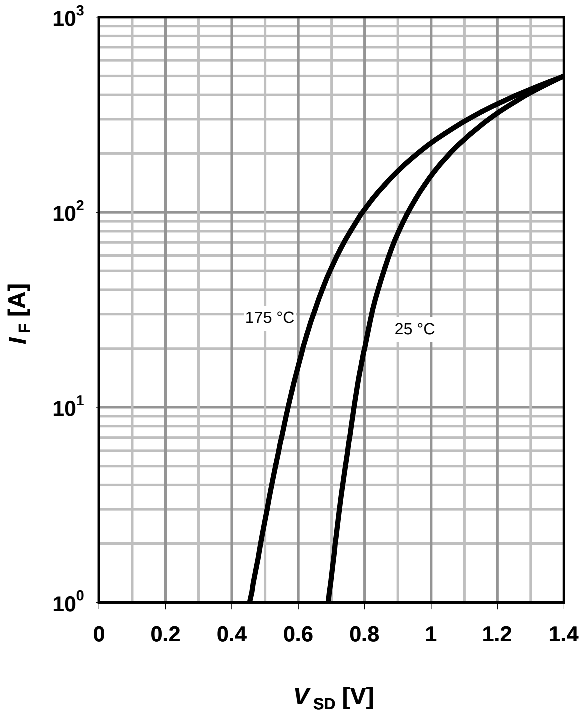
$C = f(V_{DS})$; $V_{GS} = 0$ V; $f = 1$ MHz



11 Typical forward diode characteristicis

IF = $f(V_{SD})$

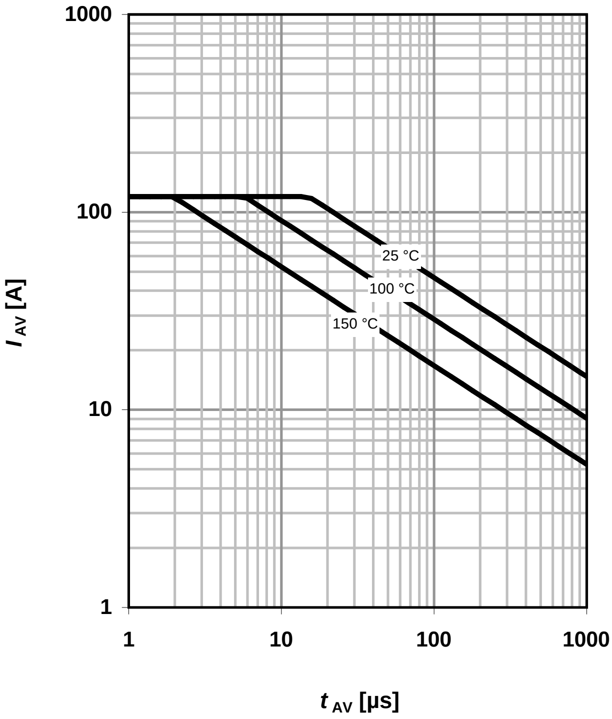
parameter: T_j



12 Avalanche characteristics

$I_{AS} = f(t_{AV})$

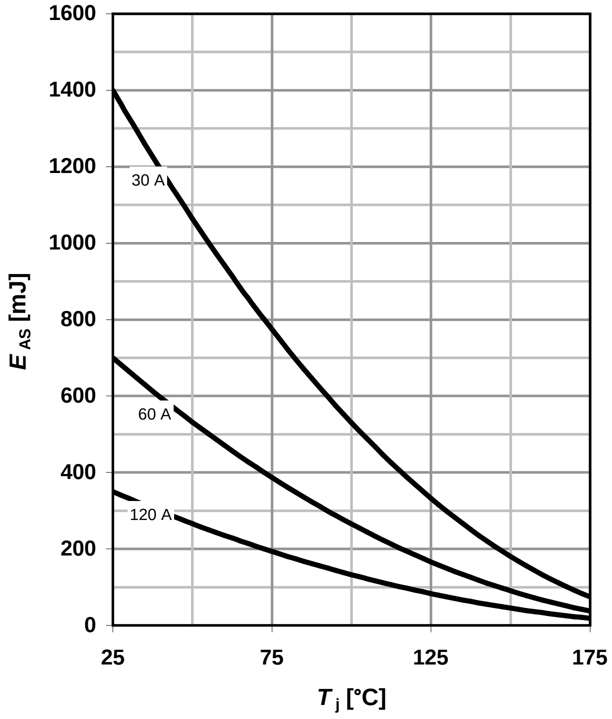
parameter: $T_{j(start)}$



13 Avalanche energy

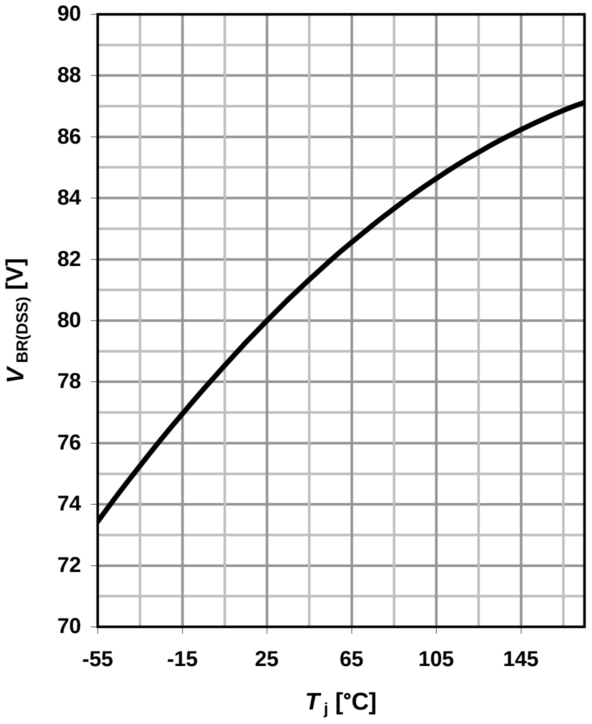
$E_{AS} = f(T_j)$

parameter: I_D



14 Drain-source breakdown voltage

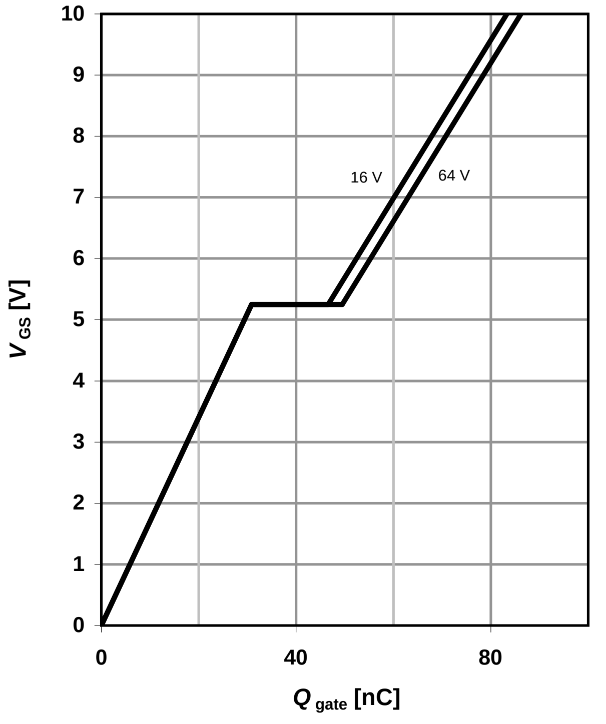
$V_{BR(DSS)} = f(T_j)$; $I_D = 1$ mA



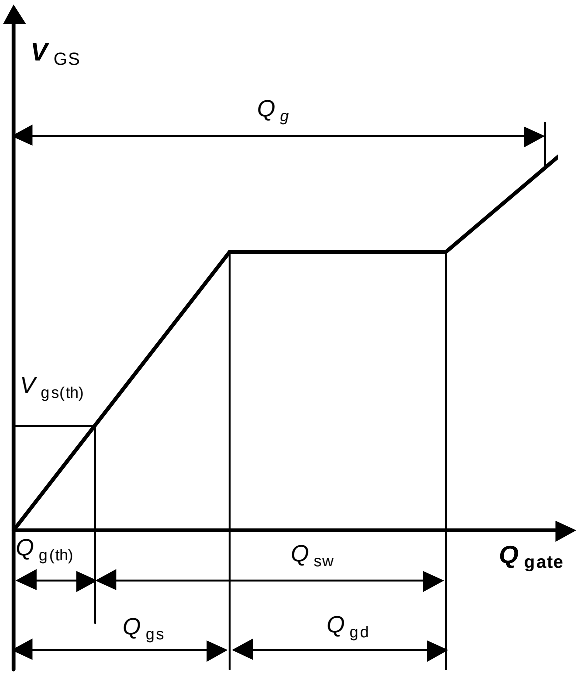
15 Typ. gate charge

$V_{GS} = f(Q_{gate})$; $I_D = 160$ A pulsed

parameter: V_{DD}



16 Gate charge waveforms



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Revision History

Version	Date	Changes
Revision 1.0	20.06.2014	Final data sheet

Компания «ЭлектроПласт» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits,General Dynamics и др.);

Помимо этого, одним из направлений компании «ЭлектроПласт» является направление «Источники питания». Мы предлагаем Вам помощь Конструкторского отдела:

- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.

Как с нами связаться

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